

**From:** Melanie Kleiss Boerger [mek67@law.georgetown.edu]  
**Sent:** Tuesday, January 29, 2008 4:17 PM  
**To:** Darton, Terry  
**Cc:** Kendrick Wilson  
**Subject:** Comments from Riverkeepers on Mirant 2-stack Permit  
Dear Mr. Darton,

The Institute for Public Representation, on behalf of the Potomac and Patuxent Riverkeepers, hereby submits comments on the proposed state operating permit for the Mirant Potomac River LLC's Potomac River Generating Station, for which public notice was given on December 21, 2007. If you have any questions, please do not hesitate to email or call me. Thank you.

Sincerely,  
Melanie Kleiss Boerger

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January 29, 2008

**VIA EMAIL**

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**Re:** Comprehensive State Operating Permit for the Mirant Potomac River Generating Station

Dear Mr. Darton:

The Institute for Public Representation, on behalf of the Potomac RIVERKEEPER® and the Patuxent RIVERKEEPER® (“the Riverkeepers”), submits the following comments to the State Air Pollution Control Board (“Board”) regarding the recommended State Operating Permit for the Mirant Potomac River Generating Station (“PRGS” or “plant”).

The Riverkeepers are nonprofit corporations whose missions are to use action, advocacy, and enforcement to protect the Potomac and Patuxent rivers. The Institute for Public Representation (“IPR”) is a public interest law firm and clinical education program. Attorneys at IPR function as counsel for groups and individuals who need effective legal representation on matters including those involving the environment. IPR represents the Riverkeepers in this and other legal matters.

The Riverkeepers oppose the Mirant plant’s continued operation because of its many harmful effects on public health and the environment and respectfully request that the Board deny issuance of the recommended permit. In particular, the Riverkeepers are concerned that the proposed merged stack configuration will result in dispersion of the plant’s pollutants over a larger area, including further reaches of the Potomac and Patuxent watersheds.

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## **BACKGROUND**

The Riverkeepers are concerned that the emissions from the Mirant plant adversely affect the health and utility of the riparian ecosystem. Coal-fired power plants, like those operated by Mirant Potomac River, LLC (“Mirant”), contribute to the acidification and destruction of surrounding waterways and their ecosystems by emitting thousands of tons of pollutants annually into the local environment. Mirant’s older technology results in greater amounts of pollution per energy generated. The Mirant plant unnecessarily acidifies the riparian watershed, reduces the health and quantity of aquatic life, and hinders residents’ ability to use and enjoy the aquatic ecosystem.

The Mirant plant emits four acidic pollutants – sulfur dioxide (SO<sub>2</sub>), nitrous oxides (NO<sub>x</sub>), hydrogen chloride (HCl), and hydrogen fluoride (HF) – into the “airsheds” of the Potomac and Patuxent Rivers, contributing to acidification of local waterways. Gaseous SO<sub>2</sub> and NO<sub>x</sub> readily react with water and oxygen in the atmosphere to form liquid sulfuric and nitrous acid, which falls to the ground as acid rain or remains suspended in fog and humidity in the air. SO<sub>2</sub> and NO<sub>x</sub> that have not yet reacted with water or oxygen settle on land and wash into the rivers, or fall directly onto the rivers themselves. Deposition of SO<sub>2</sub> and NO<sub>x</sub> (and to a lesser extent HCl and HF) can thereby acidify the waterways.<sup>1</sup> Acid rain also leaches toxic aluminum from the soil, further polluting lakes and streams.<sup>2</sup>

The four acidic pollutants vary in their effects on aquatic ecosystems. Sulfur dioxide is the main cause of aquatic acidification<sup>3</sup> with the greatest long-term and secondary effects. Sulfur dioxide acidification is widely recognized as a “cumulative process.”<sup>4</sup> NO<sub>x</sub> deposition can be particularly troublesome during winter, because plant absorption declines.<sup>5</sup> Emissions of HCl and HF are unlikely to have regional effects, but they do contribute to local acid deposition.<sup>6</sup>

Several of the region’s waterways are too acidic. The Middle and Lower Potomac rivershed are at times three to four times more acidic than normal.<sup>7</sup> Likewise, three locations in the Upper Patuxent watershed were found to have acidity levels outside the acceptable range.<sup>8</sup>

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<sup>1</sup> See U.S. Env’tl. Prot. Agency (EPA), *Clean Air Status and Trends Network: What is Deposition?*, available at <http://www.epa.gov/CASTNET/deposition.html>; NAT’L ACID PRECIPITATION ASSESSMENT PROGRAM, ACIDIC DEPOSITION: STATE OF SCIENCE AND TECHNOLOGY 32-33 (Sept. 1991).

<sup>2</sup> See EPA, *Effects of Acid Rain: Surface Waters and Aquatic Animals*, available at [http://www.epa.gov/acidrain/effects/surface\\_water.html](http://www.epa.gov/acidrain/effects/surface_water.html).

<sup>3</sup> U.S. GEN. ACCOUNTING OFFICE (GAO), GAO/RCED-85-13, AN ANALYSIS OF ISSUES CONCERNING “ACID RAIN” 12 (Dec. 11, 1984).

<sup>4</sup> *Id.* at 12, 15.

<sup>5</sup> *Id.* at 12.

<sup>6</sup> ACIDIC DEPOSITION: STATE OF SCIENCE AND TECHNOLOGY 32-33; B.J. MASON, ACID RAIN – ITS CAUSES AND EFFECTS ON INLAND WATERS 12 (1992).

<sup>7</sup> U.S. GEOLOGICAL SURVEY (USGS), WATER DATA REPORT VA-05-1, available at [http://pubs.usgs.gov/wdr/2005/wdr-va-05-1/pdf/pages\\_197-217.pdf](http://pubs.usgs.gov/wdr/2005/wdr-va-05-1/pdf/pages_197-217.pdf).

<sup>8</sup> Md. Dep’t of the Env’t, *Comment Response Document Regarding the Water Quality Analysis of Eutrophication for the Patuxent River Upper Watershed, Anne Arundel, Prince George’s, and Howard Counties, Maryland* (2006), available at [http://www.mde.state.md.us/assets/document/Upper%20Patuxent%20River%20WQA%20CRD\\_112806\\_final.pdf](http://www.mde.state.md.us/assets/document/Upper%20Patuxent%20River%20WQA%20CRD_112806_final.pdf).

Acidification and aluminum leaching can severely impair the ability of fish and aquatic life to grow, reproduce, and survive in watershed ecosystems.<sup>9</sup> Effects may be severe enough to harm or kill individual fish, reduce fish population numbers, decrease biodiversity, and even completely eliminate fish species from a waterbody.<sup>10</sup> This is particularly true for the many aquatic organisms, such as shellfish, snails, and insects, that can only survive or reproduce in neutral or basic waters.<sup>11</sup> Even if acidification does not kill fish, they may suffer chronic stress leading to lower body weight, smaller size, and reduced ability to compete for food and habitat.<sup>12</sup> The acidic pollutants jeopardize the 116 or more species of fish living in the Potomac River Basin,<sup>13</sup> and 44 fish species and 26 reptile and amphibian species in the Patuxent River Basin, where at least 4 fish species are at risk of local extinction.<sup>14</sup>

Acidification and subsequent aluminum leaching can also lead to loss of biodiversity and ecosystem destruction.<sup>15</sup> Whereas some organisms (such as frogs) may tolerate higher acidity, their prey (e.g. the mayfly) may be less tolerant, resulting in a diminished food supply for the more tolerant species. Similarly, acidification reduces the availability of calcium-rich food sources,<sup>16</sup> which may hinder the development of young birds<sup>17</sup> and negatively affect the 108 or more species of song birds, wading birds, and waterfowl using the Middle Potomac watershed for breeding.<sup>18</sup> Acid rain can also harm trees and other plants within a watershed, by washing away essential nutrients and minerals necessary to grow and fight disease.<sup>19</sup> Thus, acidification may reduce biodiversity, interrupt the food chain, and make life less hospitable for organisms in the ecosystem.<sup>20</sup>

Nitrous oxides further damage watersheds by contributing to nutrient overload and deteriorating water quality. Increased nitrogen loading accelerates “eutrophication” of water bodies, which leads to oxygen depletion and reduces fish and shellfish populations. This is particularly evident in the Chesapeake Bay, where NO<sub>x</sub> emissions constitute one of the largest sources of nitrogen pollution.<sup>21</sup>

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<sup>9</sup> EPA, *Effects of Acid Rain: Surface Waters and Aquatic Animals*.

<sup>10</sup> *Id.*

<sup>11</sup> GAO, *AN Analysis of Issues Concerning “Acid Rain”* 10.

<sup>12</sup> EPA, *Effects of Acid Rain: Surface Waters and Aquatic Animals*.

<sup>13</sup> Interstate Comm’n on the Potomac River Basin, *Fishes of the Freshwater Potomac*, Version 11/30/06 (2006), available at [http://www.potomacriver.org/living\\_resources/MasterFreshFishList.pdf](http://www.potomacriver.org/living_resources/MasterFreshFishList.pdf).

<sup>14</sup> See Md. Dep’t of Natural Res., *Patuxent River Basin*, available at <http://www.dnr.state.md.us/streams/pubs/patuxent.pdf>.

<sup>15</sup> EPA, *Effects of Acid Rain: Surface Waters and Aquatic Animals*.

<sup>16</sup> Ralph S. Hames, et al., *Adverse Effects of Acid Rain on the Distribution of the Wood Thrush *Hylocichla mustelina* in North America*, CORNELL LABORATORY OF ORNITHOLOGY 11235, 11239 (2002)

<sup>17</sup> See *id.*

<sup>18</sup> See *id.*; U.S. Nat’l Park Serv., *Chesapeake & Ohio Canal National Historic Park – Birds*, available at <http://www.nps.gov/choh/naturescience/birds.htm>. The plant’s emissions might adversely affect the fifty-five endangered whooping cranes located along the Patuxent riverbed at the USGS Patuxent Wildlife Research Center in Laurel, Maryland. Patuxent Wildlife Research Center, *Frequently Asked Questions (FAQs) About Whooping Cranes*, <http://whoopers.usgs.gov/faqs.htm>.

<sup>19</sup> EPA, *Effects of Acid Rain – Forests*, available at <http://www.epa.gov/acidrain/effects/forests.html>.

<sup>20</sup> EPA, *Effects of Acid Rain: Surface Waters and Aquatic Animals*.

<sup>21</sup> EPA, *Six Common Air Pollutants: Health and Environmental Impacts of NO<sub>x</sub>*, available at <http://www.epa.gov/air/urbanair/nox/hlth.html>.

The Mirant plant's particulate matter (PM) emissions adversely affect water quality by settling on surface water, acidifying lakes and streams. Particulate matter depletes nutrients in the soil, changes the nutrient balance in coastal waters and large river basins, damages sensitive riparian areas, and adversely affects the biodiversity of river ecosystems.<sup>22</sup> Moreover, PM reduces visibility, causes aesthetic damage, and leads to a host of respiratory and cardiovascular human health problems.<sup>23</sup>

The Mirant plant's release of NO<sub>x</sub>, volatile organic compounds (VOCs), and carbon monoxide (CO) contributes to the formation of "smog," also known as ground-level ozone.<sup>24</sup> Breathing smog can impair human respiratory functions, triggering chest pain, coughing, throat irritation, and congestion, while worsening bronchitis, emphysema, and asthma.<sup>25</sup> Effects are particularly severe for children, older adults, and adults with respiratory illnesses. Individuals exercising outdoors, such as those around the Potomac waterfront, are also at greater health risk from smog exposure. Effects are likely to be greatest during the summer months, because smog is more likely to form during hot weather and in congested population centers.<sup>26</sup> The adverse health effects of smog are further compounded because the Washington, DC metropolitan area is already in nonattainment for ozone.<sup>27</sup>

Although not controlled by the proposed permit, Mirant emits mercury, which deposits in local watersheds and is consumed by fish and other aquatic life. Contaminated fish are often consumed by humans, exposing them to methylmercury poisoning. Mercury poisoning leads to lower IQ, impaired cognitive development, language difficulties, and abnormal social development.<sup>28</sup> Mercury exposure may result in significant negative cardiovascular,<sup>29</sup> genotoxic,<sup>30</sup> and renal<sup>31</sup> effects. Mammals and birds feeding on the freshwater fish are likely to suffer similar negative health effects as humans.<sup>32</sup>

Finally, Mirant's continued operation of the PRGS hampers the ability of the community to enjoy and recreate along the Middle Potomac River near the plant. Local residents often use the area's biking and jogging paths, public park lands, and popular gathering places. Residents

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<sup>22</sup> EPA, *Particulate Matter: Health and Environment*, available at <http://www.epa.gov/oar/particlepollution/health.html>.

<sup>23</sup> *Id.*

<sup>24</sup> EPA, *Ozone: Good Up High, Bad Nearby* (June 2003), available at <http://www.epa.gov/air/ozonepollution/pdfs/ozonegb.pdf>; See also EPA, *Six Common Air Pollutants: Health and Environmental Impacts of CO*, available at <http://www.epa.gov/air/urbanair/co/hlth1.html>.

<sup>25</sup> EPA, *Ozone: Good Up High, Bad Nearby*.

<sup>26</sup> *Id.*

<sup>27</sup> EPA, NATIONAL AIR QUALITY AND EMISSIONS TRENDS REPORT – APPENDIX A – TABLE A19 (2003), available at <http://www.epa.gov/air/airtrends/aqtrnd03/pdfs/appenda.pdf> (last visited Oct. 29, 2007).

<sup>28</sup> See EPA, EPA-452/R-05-003, Regulatory Impact Analysis of the Final Clean Air Mercury Rule 2-6 (Mar. 2005) citing National Research Council, *Toxicological Effects of Methylmercury*. Committee on the Toxicological Effects of Methylmercury (2000).

<sup>29</sup> Alan H. Stern, *A Review of the Studies of the Cardiovascular Health Effects of Methylmercury with Consideration of the Suitability for Risk Assessment*, 98 ENVTL. RESEARCH 133-142 (2005).

<sup>30</sup> Marúcia I.M. Amorim, et. al, *Cytogenetic Damage Related to Low Levels of Methyl Mercury Contamination in the Brazilian Amazon*, 72 ANNALS OF THE BRAZILIAN ACAD. OF SCIENCES 497-507 (2000).

<sup>31</sup> Alenka Franco, et. al, *Long-Term Effects of Elemental Mercury on Renal Function in Miners of the Idrija Mercury Mine*, 49 ANNALS OF OCCUPATIONAL HYGIENE 521-527 (2005).

<sup>32</sup> See EPA, EPA-452/R-05-003, Regulatory Impact Analysis of the Final Clean Air Mercury Rule, 2-8-9, B-11.

use the river itself for canoeing, sailing, and fishing. By limiting human respiratory function, the plant's emissions jeopardize residents' health and restrict their ability to recreate and exercise outdoors. Because many of the plant's pollutants contribute to the endangerment of fish, they may also reduce the quality and size of fishers' potential catches. The plant's emissions thus endanger the environment and everyone living or working in the area.

## **COMMENTS**

The PRGS is a sixty year-old, obsolete coal-fired plant that has a poor record of complying with its Clean Air Act obligations. The plant will continue to adversely affect the Potomac and Patuxent rivers and the community members who live and recreate near them even if Mirant is able to comply with the obligations in the proposed permit. Furthermore, now that two additional 230kV electric transmission lines to the Central Washington, DC area are installed, there is no electricity reliability benefit to continued operation of the Mirant plant.

The proposed merged stack configuration may allow greater dispersion of harmful pollutants and thereby wreak greater harm on areas of the Potomac and Patuxent watersheds that are already too acidic or otherwise adversely affected by air pollution. The cumulative process of SO<sub>2</sub> acidification is not ameliorated by the proposed stack merge configuration. As stated in the public notice for this permit, CO and VOC annual emissions would also increase. Such emissions may further acidify and damage regional waterways.<sup>33</sup>

The Riverkeepers urge the Board not to issue this permit. The permit would allow major modifications that result in increased emissions for one or more regulated air pollutants. Such modifications may trigger the Clean Air Act's New Source Review requirements. Denial of the permit is also reasonably necessary to protect the public from air pollutants "which are or may be harmful or injurious to human health, welfare or safety, to animal or plant life . . . or which unreasonably interfere with the enjoyment by the people of life or property." 9 Va. Code §§ 10.1-1300; 10.1-1306.

If, however, the Board goes forward and authorizes Mirant's continued operation of the PRGS, we offer the following additional suggestions.

### **Trona**

The Riverkeepers ask the Board to require that all trona (sodium sesquacarbonate) be stored in an environmentally responsible manner, so that trona is not released into the environment. Trona has considerable solubility and mobility in water, interacts with acid, and can be toxic to river species at certain levels, which is why trona stockpiles must be maintained so as not to be eroded by wind and rain. The proposed permit fails to specify how Mirant must

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<sup>33</sup> See EPA, *Acid Rain Program; 2006 Progress Report*, available at <http://www.epa.gov/airmarkt/progress/arp06.html> ("These pollutants, in their various forms, lead to the acidification of lakes and streams rendering some of them incapable of supporting aquatic life."); EPA, *Air Quality Criteria for Ozone and Related Photochemical Oxidants* at 2-1, 9-19 to 9-22 (Feb. 2006), available at <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=149923> (carbon monoxide contributes to ground-level ozone, which damages plants and may cause ecosystem-wide stress).

prevent trona from entering the environment. While the permit states that “particulate emissions from dry sorbent (sodium sesquacarbonate or equivalent) handling shall be controlled by use of a pneumatic upload system and total enclosure,” Proposed Stationary Source Permit to Operate – 2 Stack Version at 5, the Riverkeepers request that the Board amend paragraph 5 on page 4, entitled “Sulfur Dioxide (SO<sub>2</sub>) and Acid Gas Emissions Controls,” to include a statement that: “All dry sorbent shall be prevented from entering the environment.”

### Alarm System

The Riverkeepers request that the permit include provisions requiring the trigger of an audible alarm in the facility’s control room when emissions of any pollutant exceed the permit’s 3-hour average or 24-hour emissions limits. In addition, any violation of the National Ambient Air Quality Standards (NAAQS) for criteria air pollutants should also trigger such an alarm. An alarm system should be designed to keep facility operators aware of the plant’s emissions when approaching a level that would violate the emissions limits or NAAQS, deter actual emissions or NAAQS violations from occurring, and also create a record of times the emissions violate the emissions limits or NAAQS.

The Riverkeepers ask that the permit also require Mirant to alert the community when its emissions violate emissions limits or NAAQS. Because NAAQS are set at levels “requisite to protect the public health” and “welfare” and emissions limits are also set in consideration of public health and welfare, such a warning system would allow local residents and those recreating in the area to avoid outdoor activity when emissions levels may be particularly dangerous to public health. *See* 42 U.S.C. § 7409(a)(2)(b). Mirant should keep the public informed about the plant’s emissions via websites, local newspapers, public access television channels, and e-mail alerts, particularly when levels approach or violate the emissions limits or NAAQS. For example, the permit could require Mirant to establish an e-mail system to alert members of the community who sign-up to receive messages. Printing and broadcasting notices in a number of different information sources, such as on local radio and television stations, would help ensure that all segments of the public are informed of threats to human health and welfare from the plant, and would give people the opportunity to plan their outdoor activities accordingly.

Thank you for the opportunity to provide comments. We urge the Board to consider the Mirant plant’s significant impacts on public health and the surrounding aquatic environment, particularly as a result of the proposed stack merge. If you have any questions about the comments contained in this letter, please contact Melanie Kleiss Boerger at 202-662-4025 or mek67@law.georgetown.edu.

Sincerely,

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